

Developing a Framework to Address Environmental Justice Concerns: Reflections and Evaluation from a Maryland Case Study

Johns Hopkins University
Graduate Program in Environmental Sciences and Policy
Practicum in Environmental Planning
Spring 2003

Purpose of the Project

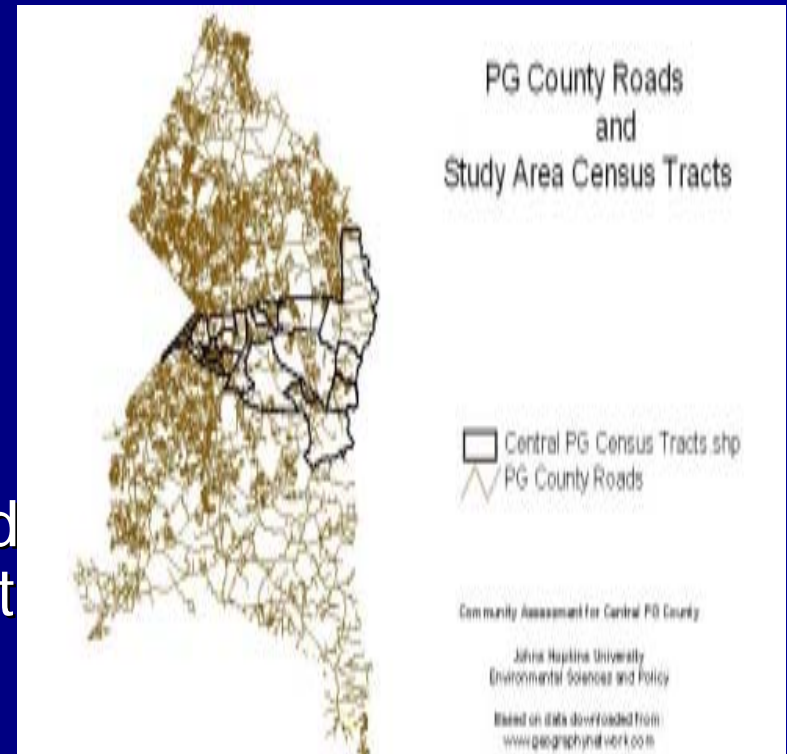
- Assist a community in using the Framework to address environmental justice concerns
- Provide feedback to the Commission about the implementation of the framework tool

Study Area – “Central Prince George's County (CPG)”

Boundaries

- North – Route 214
- South – Route 4
- East – County line
- West – DC line

The study area was expanded to include all census tracts that lie partially or completely within the boundaries above.



Community Concerns

LULUs

- Class III landfills, other waste facilities, and miscellaneous land uses
- Worse in the past 10 to 15 years

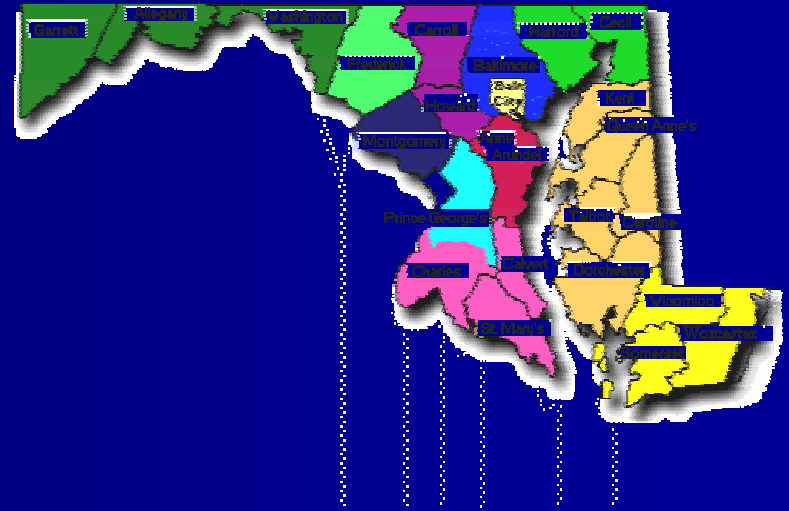
Impacts of concern

- property values
- aesthetics
- fumes and noise from trucks
- proximity to schools and other community facilities
- potential health problems
- agricultural land to waste sites
- uncertainty about end point.

Units of Comparison



Prince George's County



State of Maryland

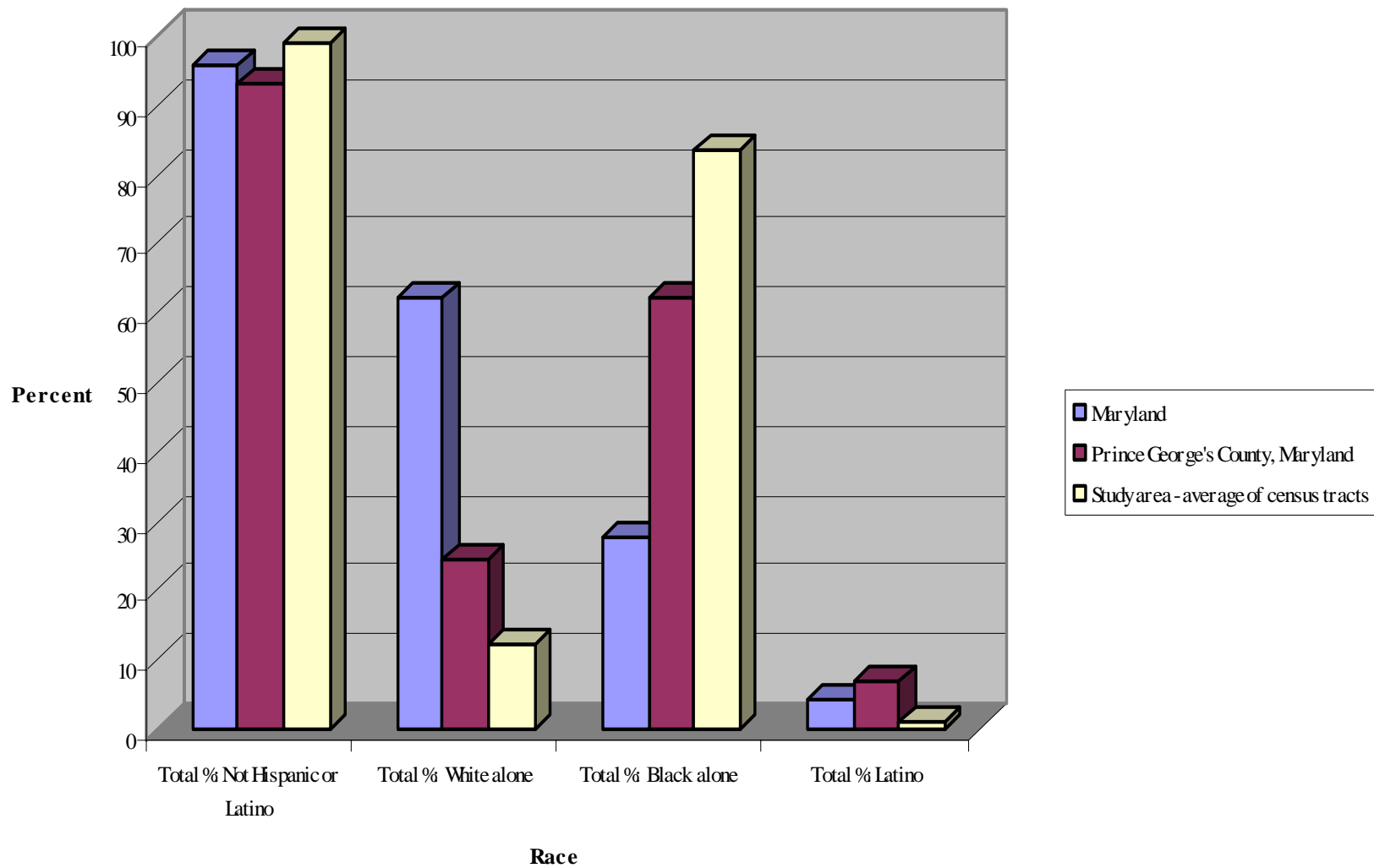
Demographic Data

1. Race/Ethnicity
2. Income
3. Educational Attainment
4. Housing
5. Community Stability
6. Community Amenities
7. Political Efficacy
8. Employment

1. Race and Ethnicity

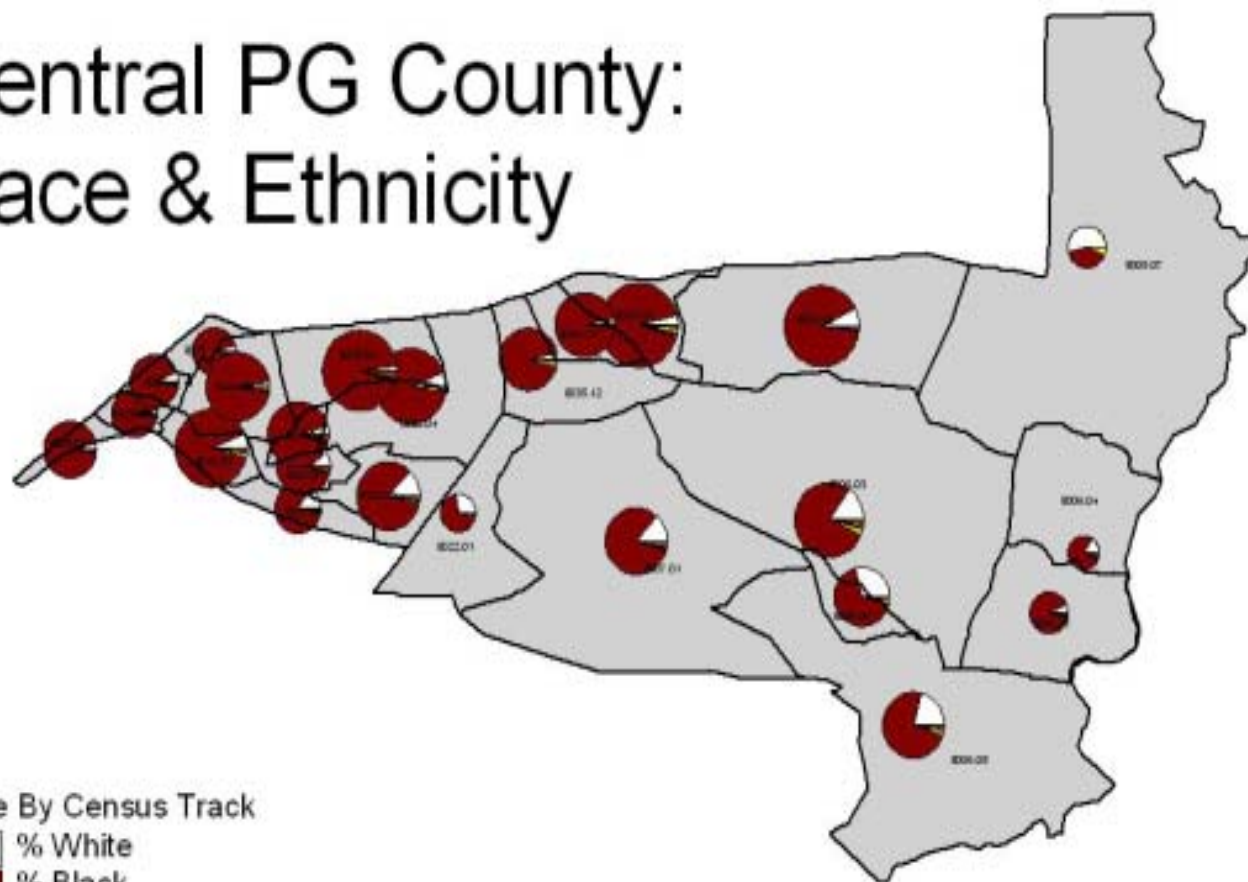
- Census data for 2000 available online
- Prince George's County – highest black population of any county in the state
- CPG – Highest black population in PG County
- Other non-white population is small in the study area

Race and Ethnicity



Central PG County: Race & Ethnicity

Race By Census Tract



Community Assessment for Central PG County

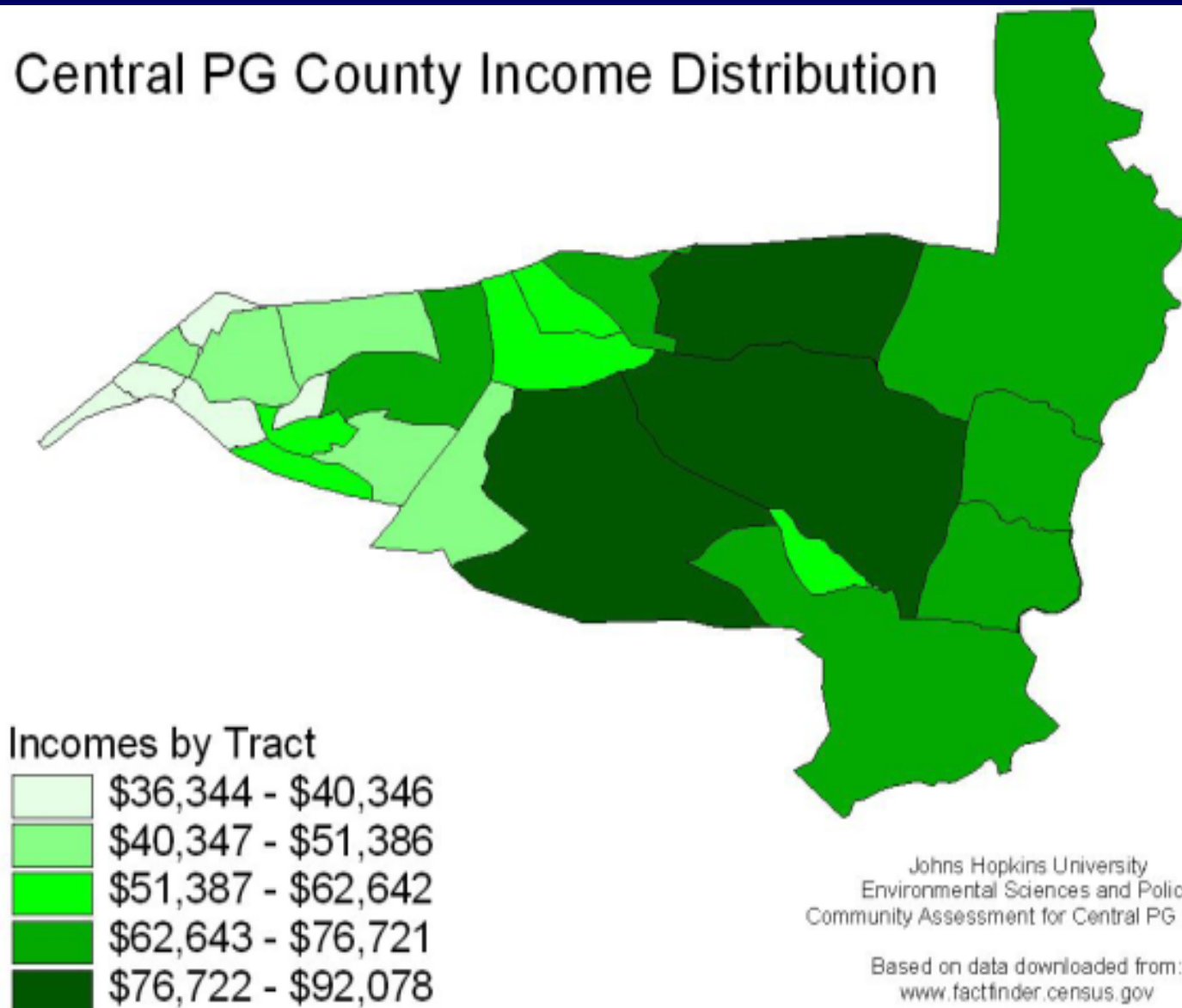
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Based on data downloaded from:
www.factfinder.census.gov

2. Income and Poverty

- Median Household Income from the Census data for 2000.
- Statewide in Maryland, the median household income is \$52,868, and in Prince George's County, it's \$55,256.

Central PG County Income Distribution



2. Income and Poverty (cont'd)

- % of households living at or below the poverty line estimated by the Census - 1999.
- The poverty distribution ranges from 1.25% to 15.56%. The mean is 5.90%.
- The highest levels of poverty are found on the western edge and the lowest in the middle and eastern parts of the study area.
- Statewide in Maryland, 8.32% of households are below the poverty line.
- For Prince George's County it's 6.95%.

3. Educational Attainment

- 2000 Census data for highest grade completed of population over 25 years.
- Educational attainment in the study area increases from west to east.

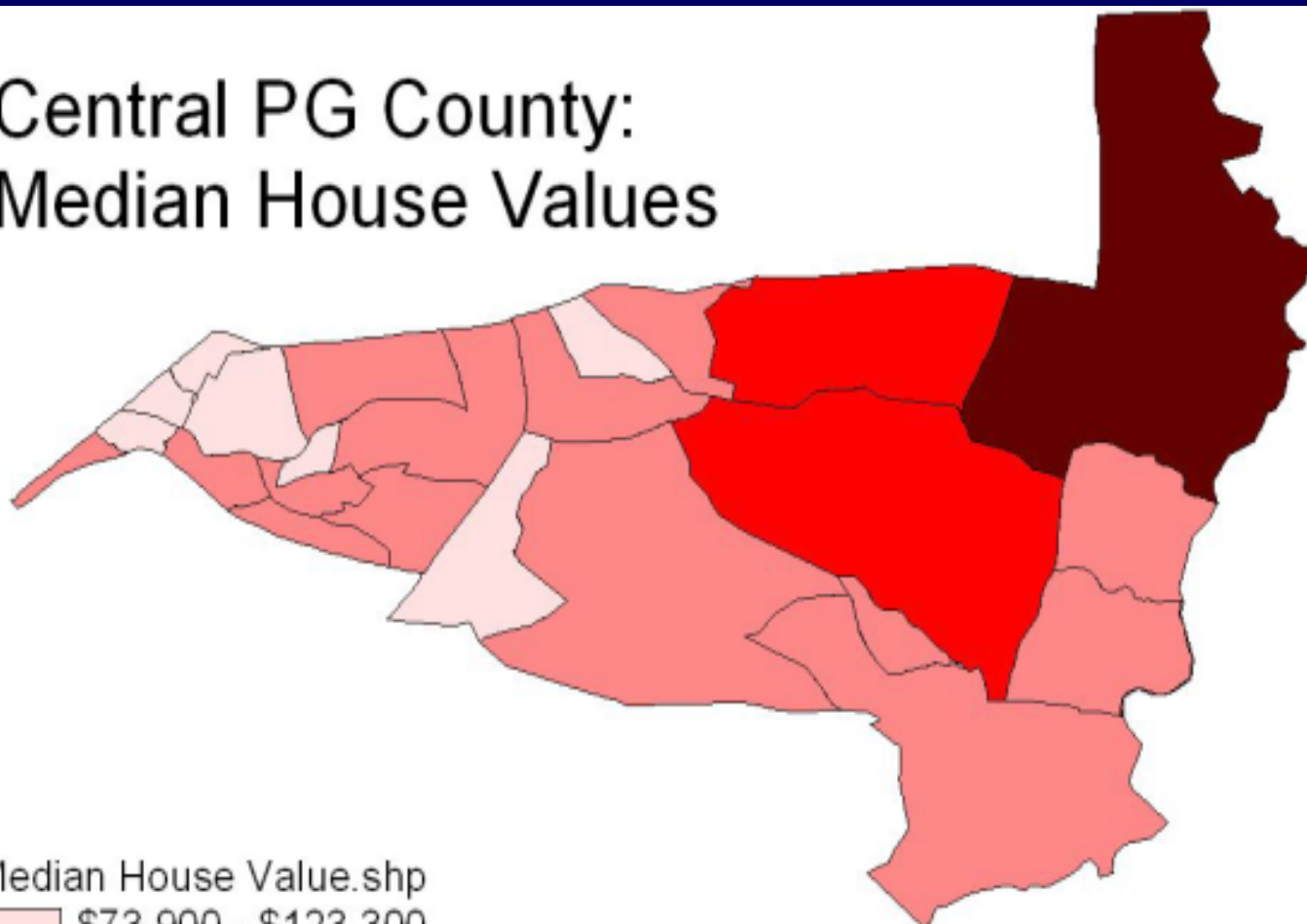
3. Educational Attainment (cont'd)

- No Schooling + High School Graduate:
 - All counties in MD average: 33.4%
 - CPG average: 30.7%
- Bachelors Degree:
 - All counties in MD average: 14.7%
 - CPG average: 14.4%
- Beyond Bachelors Degree:
 - All counties in MD average: 9.5%
 - CPG average: 6.8%

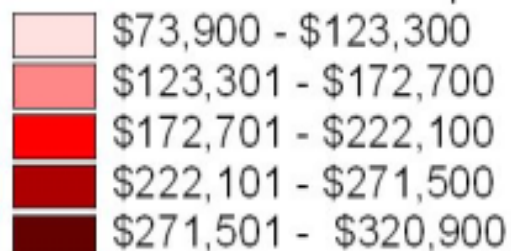
4. Housing

- Census data for 2000 available online
- Average year built and rent in state, county, and CPG are comparable
- Average housing value at state and county level similar
- Average housing value in CPG is approx. \$5,000 less than state/county

Central PG County: Median House Values



Median House Value.shp



Community Assessment for Central PG County

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Based on data downloaded from:
www.factfinder.census.gov

5. Community Stability

■ Residential

Study Area

Average Percentage of
Census Tracts Living
in the Same House in
the Study Area Since
1995 in 2000

53.06%

Average Percentage of
Census Tracts Living in a
Different House, Same
County in the Study
Area Since 1995 in 2000

23.71%

In All of
Maryland

Average Percentage of
Counties Living in the
Same House Since 1995
in 2000 for Maryland

53.98%

Average Percentage of
Census Tracts Living in
a Different House, Same
County in Maryland
Since 1995 in 2000

19.50%

6. Amenities

- Schools, Libraries, Community Centers, Hospitals, Parks & Recreation Facilities.
- Schools and parks are adequate, but there are no hospitals and few libraries and community centers.
- Very difficult to obtain this data because it is in many locations.

6. Amenities (con't)

	Maryland	Prince George's County	Central Prince George's
Population	5,296,486	801,515	104,099
Schools	1,488 (0.000028)	261 (0.000033)	24 (0.000023)
Parks	N/A	341 (0.00039)	25 (0.00024)
Hospitals	60 (0.000011)	6 (0.000007)	0 (0)
Libraries	180 (0.000034)	19 (0.000024)	2 (0.000019)
Community Centers	N/A	37 (0.000046)	3 (0.000029)

(per Capita)

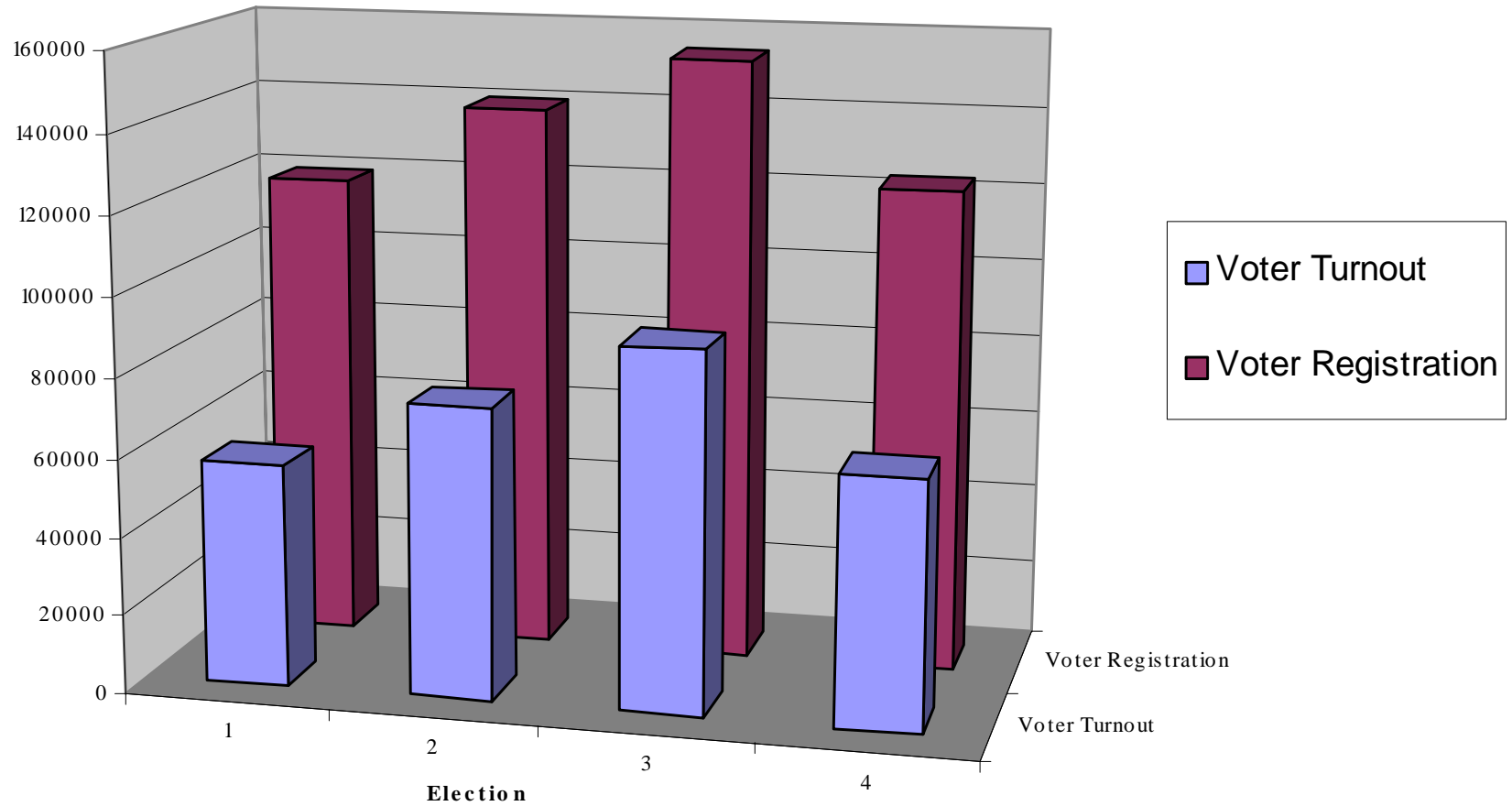
6. Amenities (con't)

- Notable Findings
 - Versus Prince George's County
 - 70.8% Schools per Capita
 - 61.3% Parks & Recreation Facilities per Capita
 - 81.0% Libraries per Capita
 - 62.4% Community Centers per Capita
 - Versus Other Maryland Counties
 - Average Number of Schools per Capita
 - Below Average Hospitals and Libraries per Capita

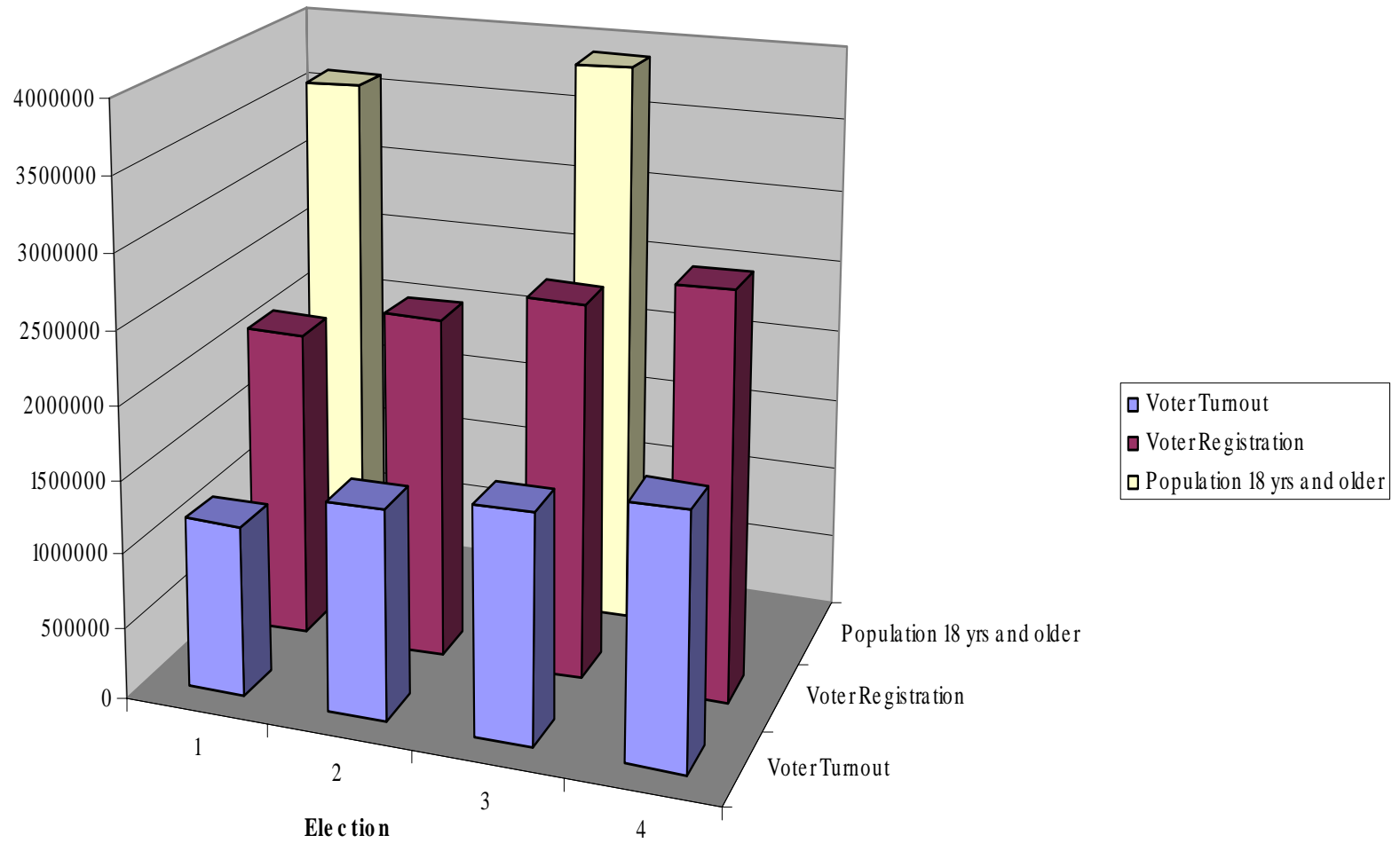
7. Political Efficacy - Data

- “voter turnout” for the past 12 years-1990 to 2002 Gubernatorial Elections
- Legislative districts have changed based on both the 1990 and 2000 census.
- Potential voters = population over 18 years.
- Voting= total voter turnout versus the number of registered voters.

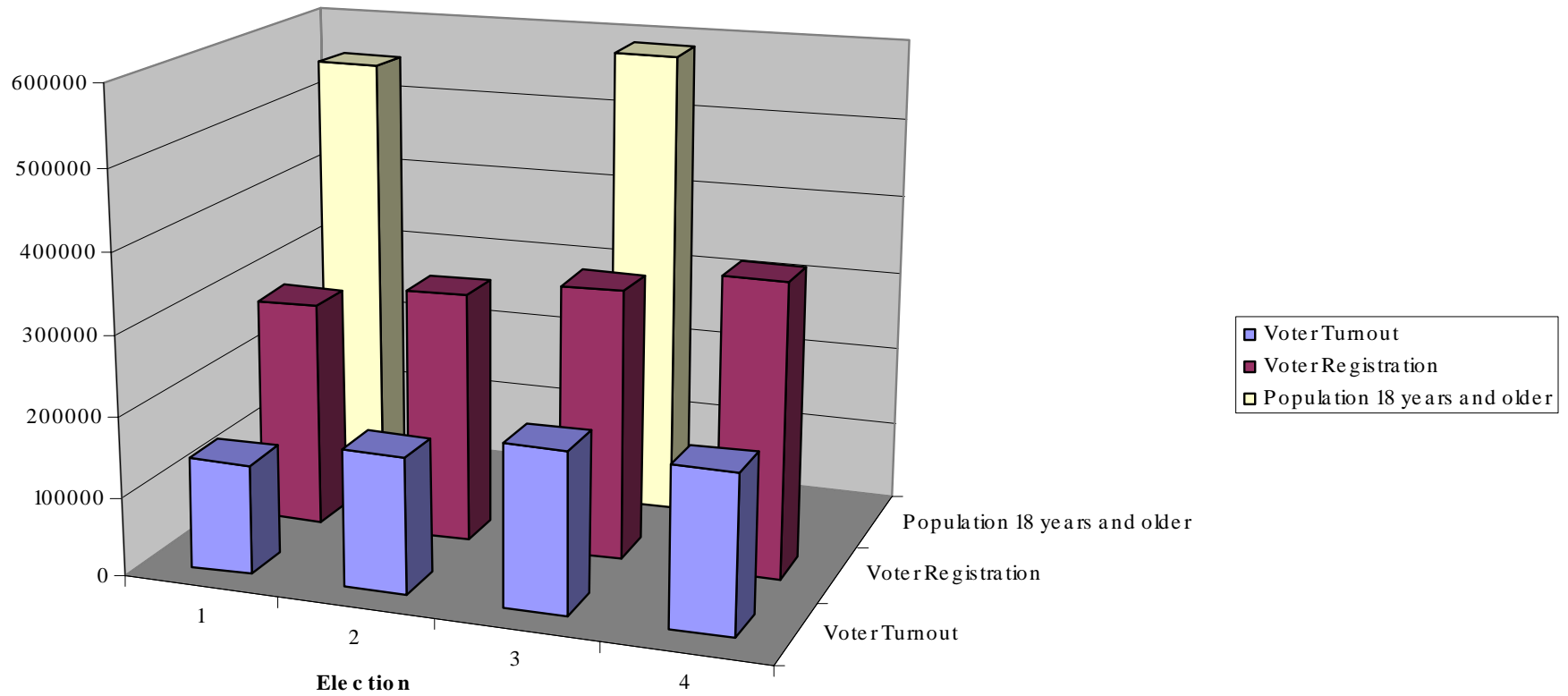
Study Area Registered Voters and Voter Turnout



State Voting Information 1990-2002



Prince George's County Voter Information 1990-2002



8. Employment

Employment data collected from 2000 Census

- Unemployment in Study Area: 6.35%
- Unemployment in Prince George's County: 5.91%
- Unemployment in Maryland: 4.77%

Environmental Data

- Water Supply
- Water Quality
- Air Quality
- Land Use

Water Supply

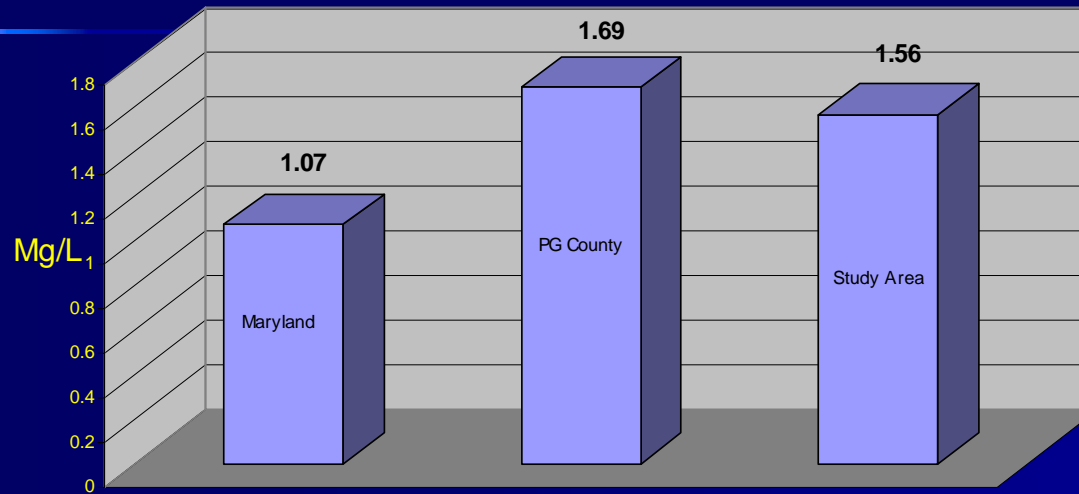
- Two permitted industrial groundwater discharge sites
- Locations analyzed for dependence on groundwater
- No major environmental threat found
- Data easy after finding the correct person at MDE!

Water Quality

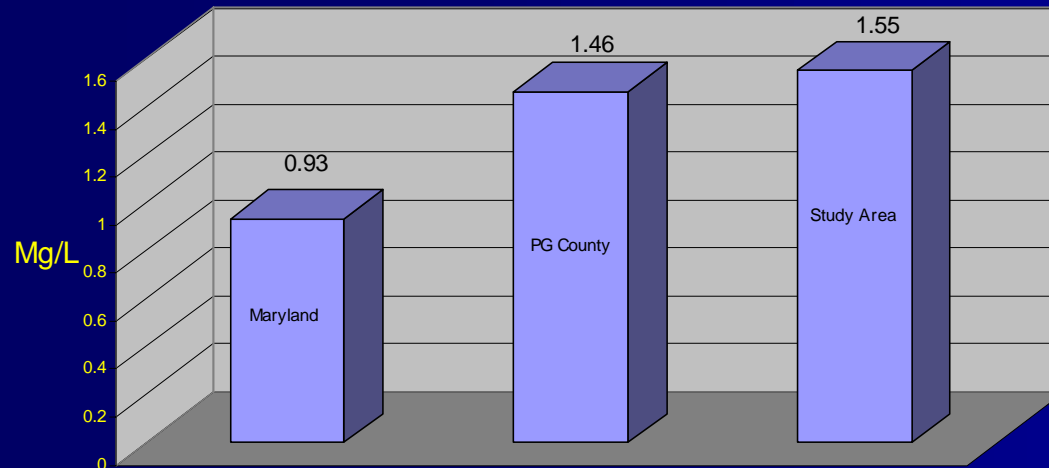
- Maryland Biological Stream Survey
- Monitoring sites in study area or representing watershed
- 6 Indicators (nitrogen, D.O., Hg, sediment load, pathogens)

Water Monitoring

Total Nitrogen 1992



Total Nitrogen 2002



Air Quality – Facility Permits

- Permit and compliance data came from EPA databases
- In CPC two facilities with Title V permits, 287 facilities release air pollution.
- In Prince George's County 13 facilities have Title V permits and 181 in the State of Maryland;
- 1,847 facilities release air pollution in Prince George's County (2nd highest behind Baltimore City/County) and 11,354 in the State of Maryland

Air Quality - Compliance

Major air permit facilities that have had inspections, violations, or enforcement actions within last two years.

In CPC 7 major facilities, three have not been inspected within last two years, no violations or enforcement actions have been taken

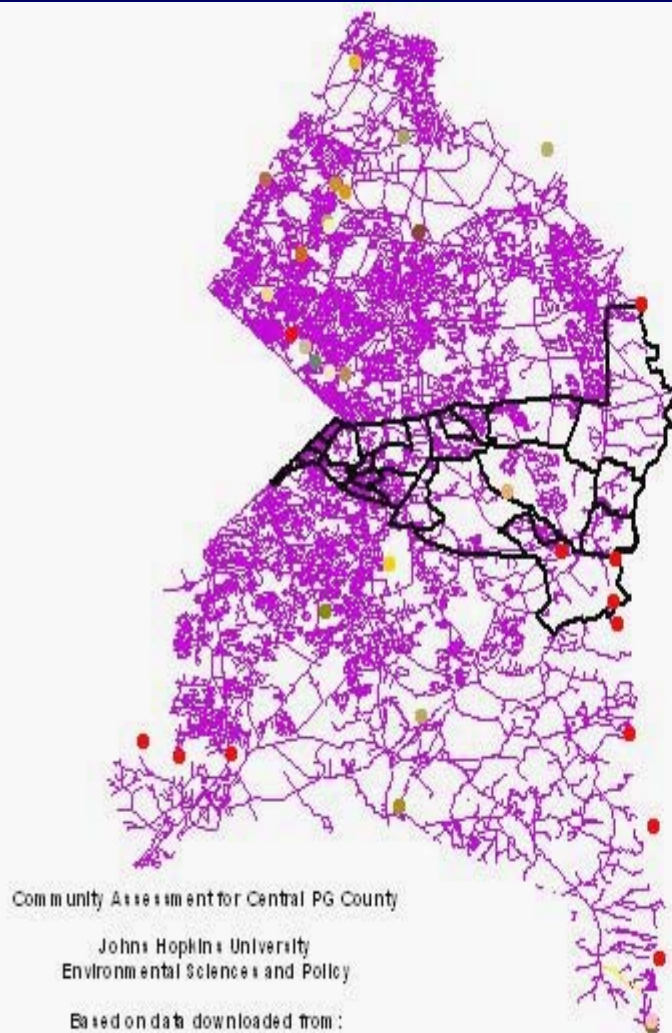
34 major facilities within Prince George's County with one violation.

448 major facilities within the State of Maryland and 33 have had violations within the last two years.

Air Quality – Criteria Pollutants

- EPA's National Emission Trends (NET) database
- Number of monitoring sites in CPG=5; County=43; State=486
- Data prior to 1997 is not available on the website
- Understanding of monitoring data requires technical knowledge

Air & Water Points



- 2002 water quality.dbf
- Air emissions.dbf
 - Adelphi Laboratory Center
 - Andrews Air Force Base
 - Bowie State 14000 Jericho Pk. Rd
 - Brown Station Road Landfill
 - Craftsman Press
 - Duron, Incorporated
 - Editors Press
 - Fda - Beltsville Research Facili
 - Kelly Press
 - Nasa/Goddard Space Flight Center
 - Panda Brandywine
 - Peake Printers
 - Potomac Electric - Chak Point
 - Prince Geo Cntrctrs
 - Redland Genstar - Branchville
 - Redland Genstar - Brandywine
 - S & S Graphics
 - Safeway Stores - Bread Plant
 - Smeco - Chak Point
 - Stone Industrial
 - University Of Maryland
 - W M A T A - 5801 Sunnyside Avenue
- Central PG Census Tracts.shp
- ~ Roads.shp

Land Use Data

- Maryland Property View 2000
- Maryland Department of Environment
- Maryland Department of Planning
- Data was not consistent across the board
- Data came from a variety of sources

Central Prince George's County Land Use Descriptions



Clippedlu.shp

- Agricultural building breeding and training facilities, stora
- Bare ground
- Brush
- Commercial
- Cropland
- Deciduous forest
- Evergreen forest
- High density residential
- Industrial
- Institutional
- Low density residential
- Medium density residential
- Mixed forest
- Open urban land
- Pasture
- Row and garden crops
- Transportation
- Water
- Wetlands

Community Assessment for Central PG County

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**Based on data from:
Maryland Property View 2000**

Land Use Data General Findings

- Central Prince George's County
 - 0.44% acres of land is a Class III landfill, rubble fill, mining operation, asphalt operation, trash/transfer station, or construction site.
- Prince George's County
 - 0.17% acres of land accepts solid waste (as regulated by the state of Maryland).
- State of Maryland
 - 0.33% acres of land accepts solid waste (as regulated by the state of Maryland).

Changes to Framework

- Omit Health Data
 - Time constraints
 - Disaggregated data
 - Difficulties drawing causal conclusions
- Spatial Analysis
 - Spatial relationship of “marginalized communities” to facilities

Spatial Analysis – Step 1

Creation of Index: Higher numbers were assigned to areas with higher potential for discrimination

Example of Index

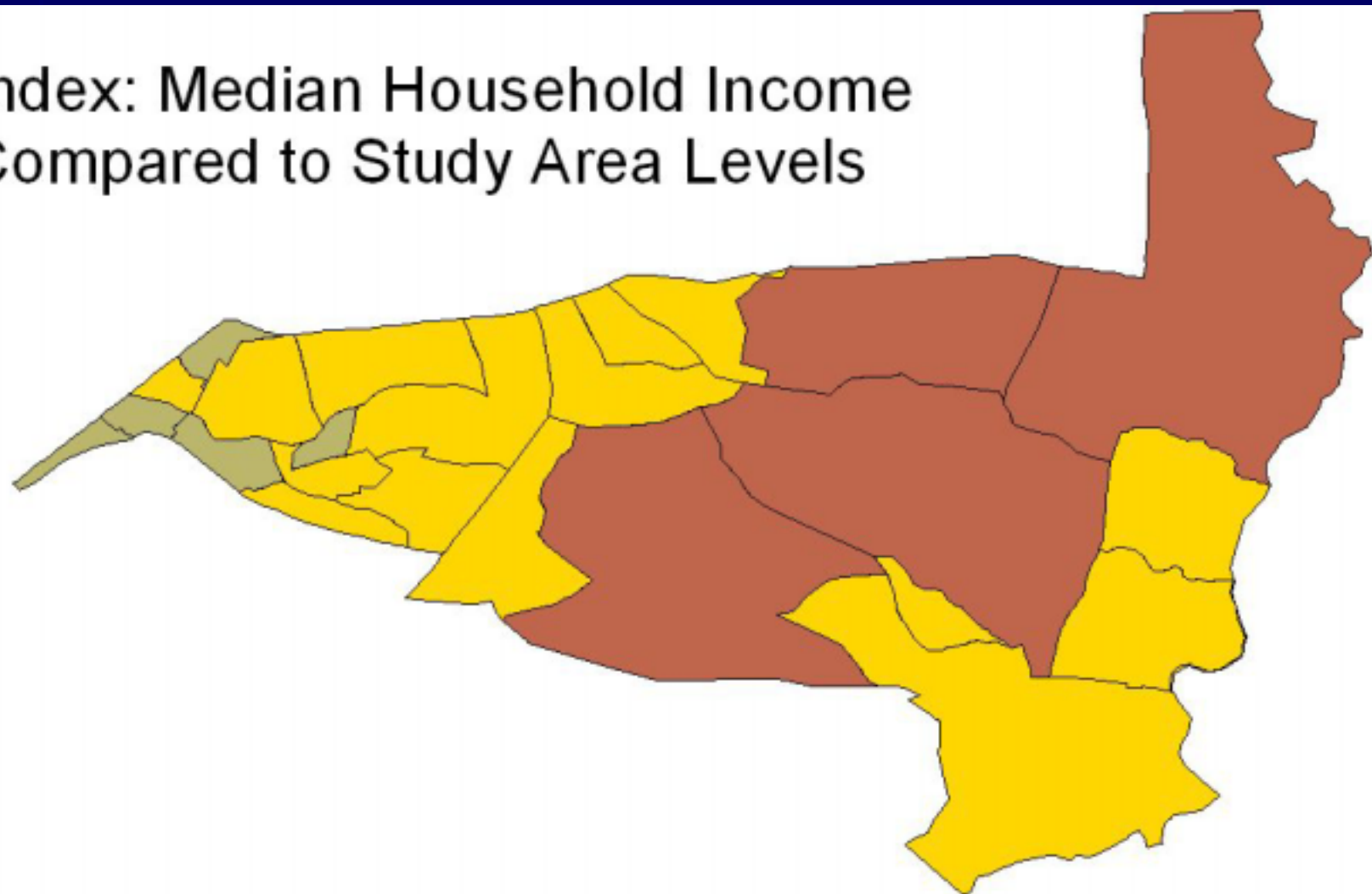
	Tract 1	Tract 2	Tract 3	
Income	1	2	2	
Race	1	2	3	
Education	2	2	2	1 - Below Average
Employment	1	2	3	2 - Average
Pol. Participation	1	3	3	3 - Above Average
Totals	6	11	13	

Spatial Analysis – Step 2

Relationship to facilities

- Once the index is created and includes all socio-demographic factors that are to be considered, a proximity analysis can be run to determine if a higher number of emission sites are contained within the tracts with the highest overall index values.

Index: Median Household Income Compared to Study Area Levels



Income Index

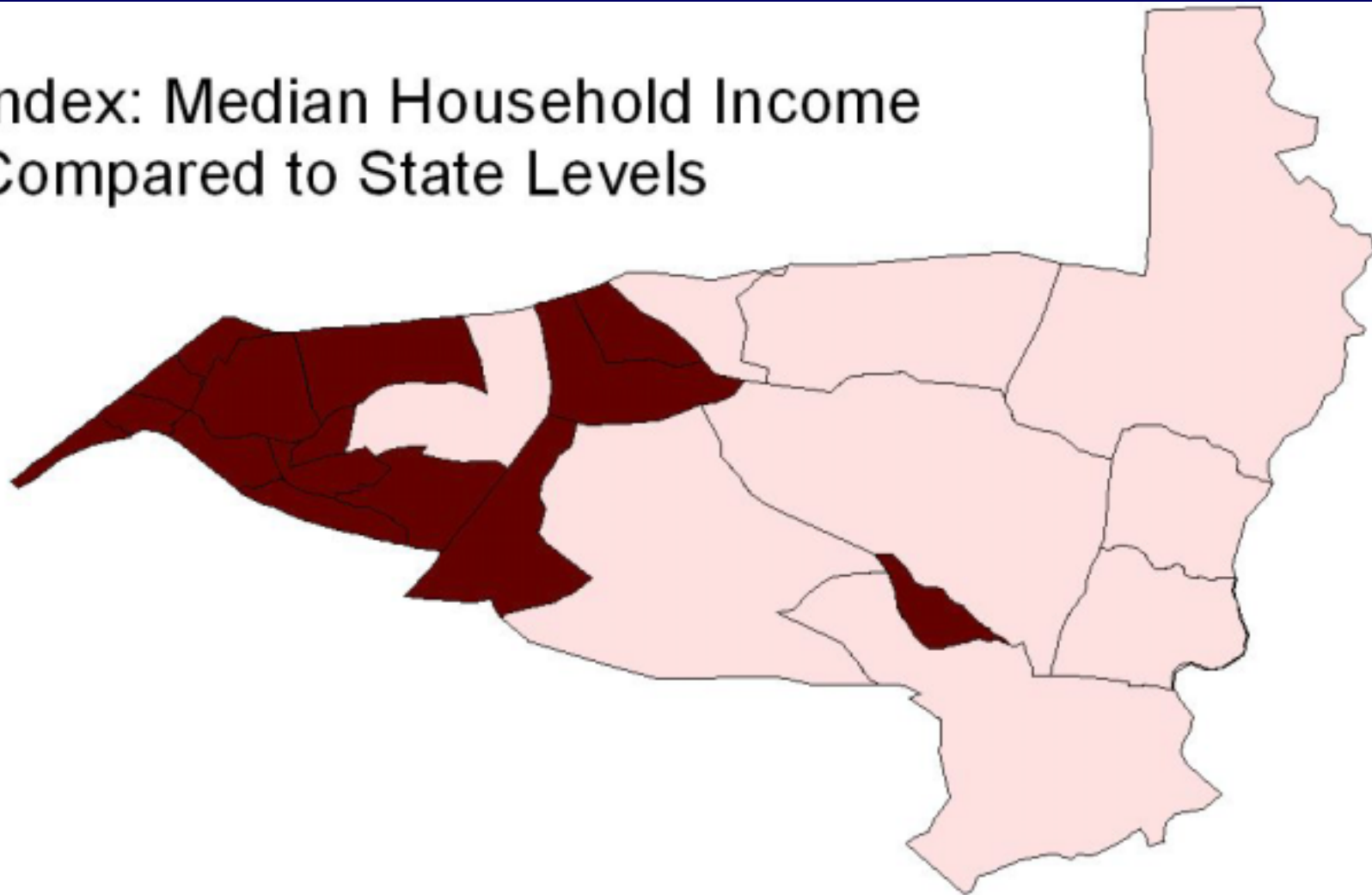
- Above SA Ave Income
- Ave Study Area Income
- Below SA Ave Income

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

**Based on data downloaded from:
www.geographynetwork.com**

Index: Median Household Income Compared to State Levels



Community Assessment for Central PG County

Income Index

-  Above State Ave Income
-  Average State Income

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Based on data downloaded from:
www.geographynetwork.com

Suggested Options for Additional Analysis:

- Provide a count of the number of emitting facilities within the entire study area, and their total emissions for each criteria pollutant. Create ratios of amounts of each pollutant to unit area or per person, and compare those to the values for all of PG County and to all of MD.
- Create buffers with a **2 mile** (?) radius around each of the permitted facilities. Using the census data, determine the demographic characteristics of the population within those buffers.

Summary of Findings – Demographic Assessment

- CPG predominately Black
- Income increases and poverty decreases west to east
- Educational Attainment is slightly lower than the State as a whole
- Housing value is higher in eastern part of CPC
- Residential Tenure is about the same as for the state
- Political Efficacy was lower at the start of the problem
- Unemployment is higher for CPG county than for the county of the state

Summary of Findings – Environmental Assessment

- -5 of 11 permits issued were expired or didn't have permit data information
- Of all of the facilities that have a surface discharge permit in PG county over half have not been inspected.
- PG has the second highest number of pollution generating pollution facilities, but only 10% of monitoring sites
- Nearly .5% of CPG used for Class III

Summary of Findings - Framework

- Very difficult and time consuming
- 3 months was not enough time to complete the study
- Needed significant level of expertise and access to knowledgeable people

Recommendations - Framework

- Put together list of resources where you can get information for assessment
- Provide support and technical assistance
- Do pilot project with community members

Recommendations - CPG

- Variables not included (or problematic) that could be important – health, change in property values, and voting
- Commission should follow through with the project because the landfills do have a significant impact on the community